HP Moonshot-45XGc Switch
User and Maintenance Guide

Abstract

This document is for the person who installs, administers, services, and troubleshoots switches. This guide provides identification, setup, installation, and removal procedures. HP assumes you are qualified in these areas.

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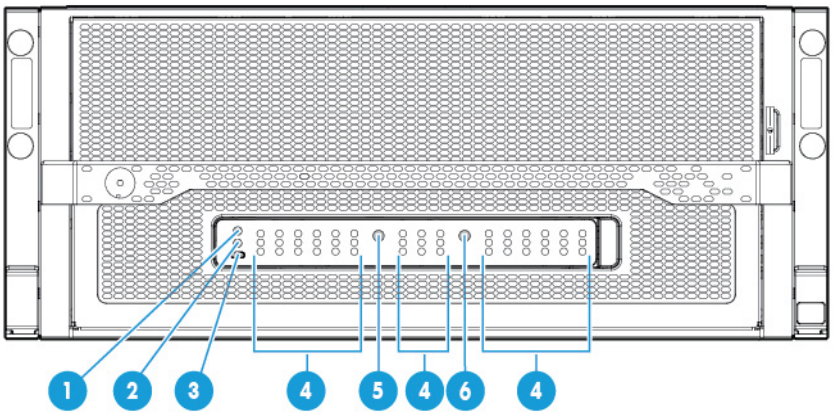
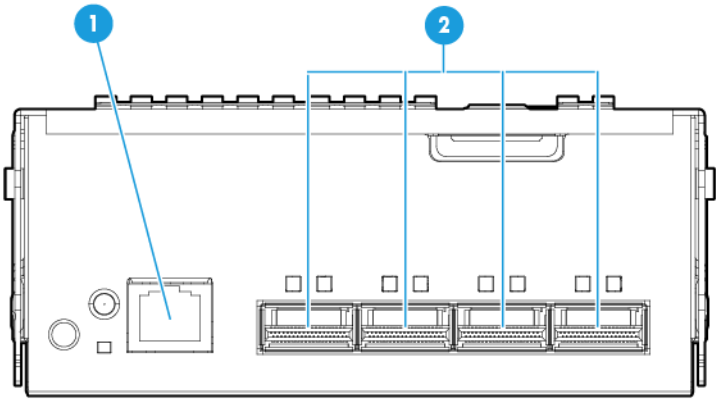
Component and LED identification

Chassis front panel LEDs and buttons



Item	Description	LED Status
1	Chassis power LED	Flashing green = The chassis is waiting to power on. Green = Normal operation Amber = Standby operation Off = No power
2	Chassis health LED	Green = Normal operation Flashing amber = Degraded condition Flashing red = Critical condition Off = No power
3	Chassis UID LED/button	Blue = Chassis ID is selected. Flashing blue = System firmware update is in process. Off = Chassis ID is not selected.
4	Cartridge health LEDs	Green = Normal operation Amber = Standby mode Flashing amber = Degraded condition Flashing amber (All) = Moonshot 1500 CM module is not installed. Flashing red = Critical condition Off = Cartridge is not installed or no power exists.
5	Switch module A health LED	Green = Normal operation Flashing amber = Degraded condition Flashing red = Critical condition Off = Switch module is not installed or no power exists.
6	Switch module B health LED	Green = Normal operation Flashing amber = Degraded condition Flashing red = Critical condition Off = Switch module is not installed or no power exists.

Moonshot-4QSFP uplink module components



Item	Component	Description
1	Serial console port	For management
2	QSFP+ ports Q1–Q4	40Gb Ethernet*

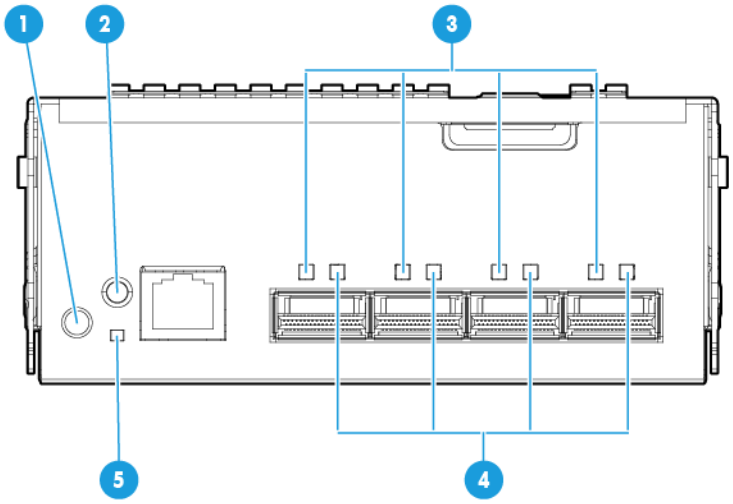
*Ports Q1–Q4 support Ethernet traffic only.

The following cables and transceiver modules are supported:

- HP 40GBASE QSFP+ DAC
- HP 40GBASE QSFP+ to 4x10G SFP+
- HP 40GBASE QSFP+ SR4
- HP 40GBASE QSFP+
- HP QSFP+ to SFP+ Adapter

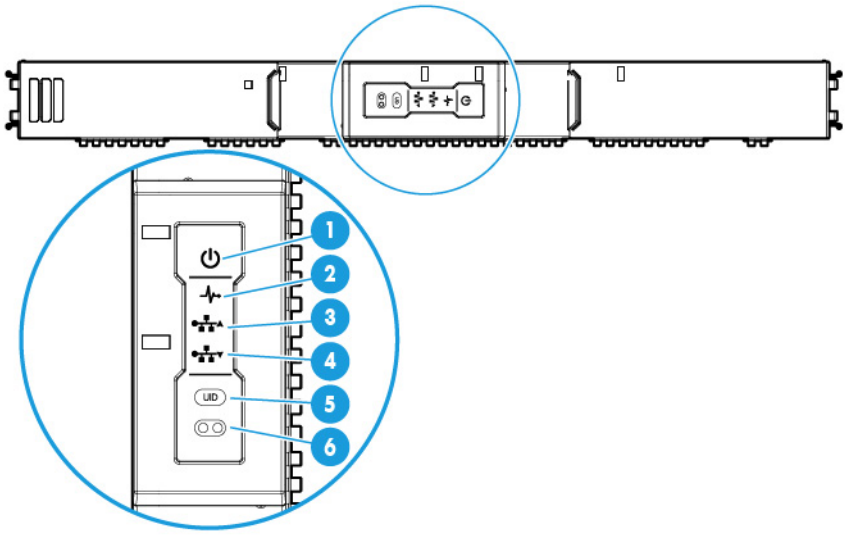
Use any available port to connect to the data center. Be sure the port is populated with a supported HP transceiver module that is compatible with the data center switch port type.

Moonshot-4QSFP uplink module buttons and LEDs



Item	Description	Status
1	Uplink module UID LED/button	Solid blue = Switch module ID is selected. Flashing blue = Switch module firmware update is in progress. Off = Switch module ID is not selected.
2	Uplink module health LED	Green = Normal operation Flashing amber = Degraded condition Flashing red = Critical condition Off = No power
3	Uplink module link LED	Solid green = Link Off = No link
4	Uplink module activity LED	Flashing green = Activity Off = No activity
5	Reset button	Resets the switch module

Moonshot switch module LEDs



Item	Description	Status
1	Switch module power LED	Green = Normal operation Amber = Standby operation Off = No power
2	Switch module health LED	Green = Normal operation Flashing amber = Degraded condition Flashing red = Critical condition Off = No power
3	Switch module uplink activity LED	Green = Link Flashing green = Activity Off = No activity
4	Switch module downlink activity LED	Green = Link Flashing green = Activity Off = No activity
5	Switch module UID LED/button	Solid blue = Switch module ID is selected. Flashing blue = Switch module firmware update is in progress. Off = Switch module ID is not selected.
6	Access panel sensor	Detects the presence of the access panel*

*The fan speed adjusts automatically when the access panel is installed or removed.

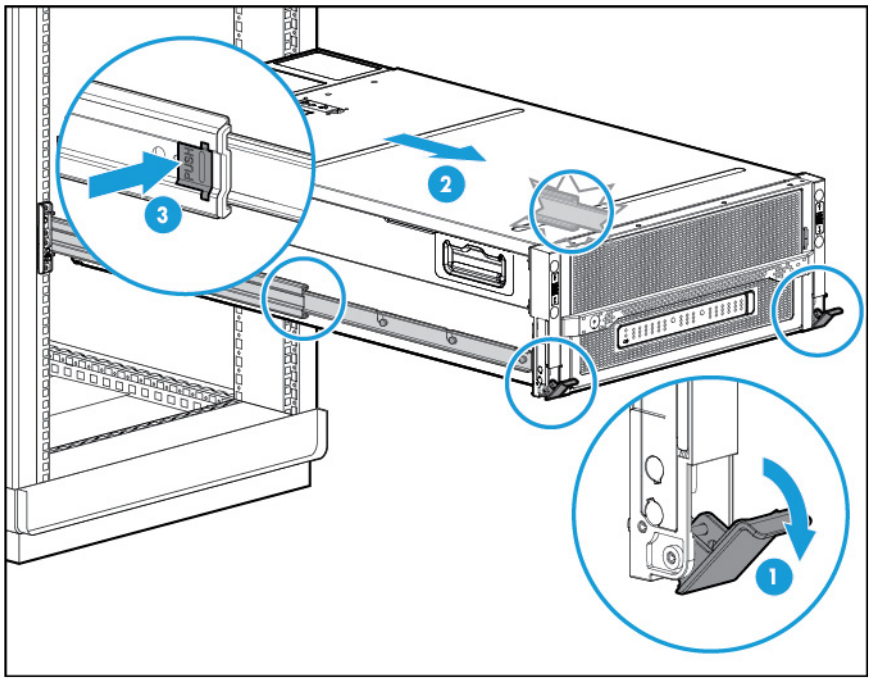
Operations

Extend the chassis from the rack

1. Pull down the quick release levers on each side of the chassis.

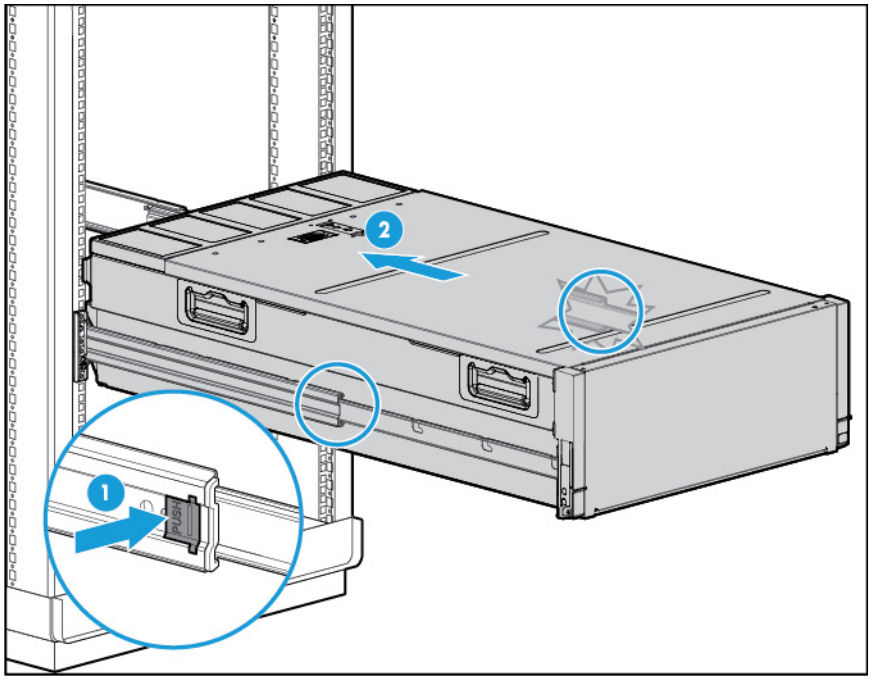
WARNING: To reduce the risk of personal injury or equipment damage, be sure that the rack is adequately stabilized before extending a component from the rack.

2. Extend the chassis from the rack until it locks once.
3. Press the push tab on the rail, and then fully extend the chassis.



WARNING: To reduce the risk of personal injury, be careful when pressing the server rail-release latches and sliding the server into the rack. The sliding rails could pinch your fingers.

4. After performing the installation or maintenance procedure, slide the chassis back into the rack, and then press the chassis firmly into the rack to secure it in place.



Remove the access panel

IMPORTANT: After performing a procedure inside the chassis, always install the access panel on the chassis when complete. Do not operate the chassis for long periods of time with the access panel removed.

IMPORTANT: To maintain appropriate cooling, fans will operate at a high speed when the access panel is removed.

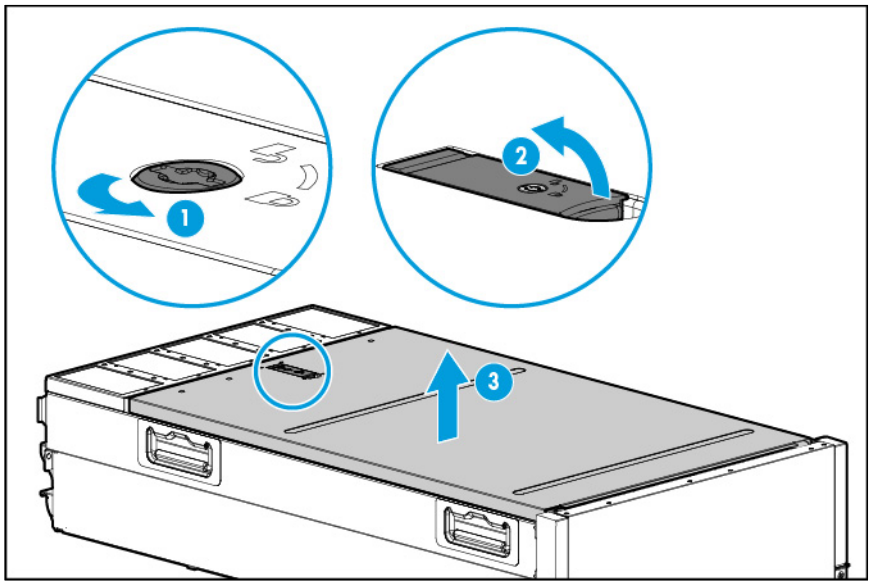
IMPORTANT: When the access panel is removed, the chassis might be placed into a low power operating state to reduce thermal stress.

To remove the component:

1. If the locking latch is locked, use a T-15 Torx screwdriver to unlock the latch.
2. Open the locking latch.

   The access panel slides back, releasing it from the chassis.

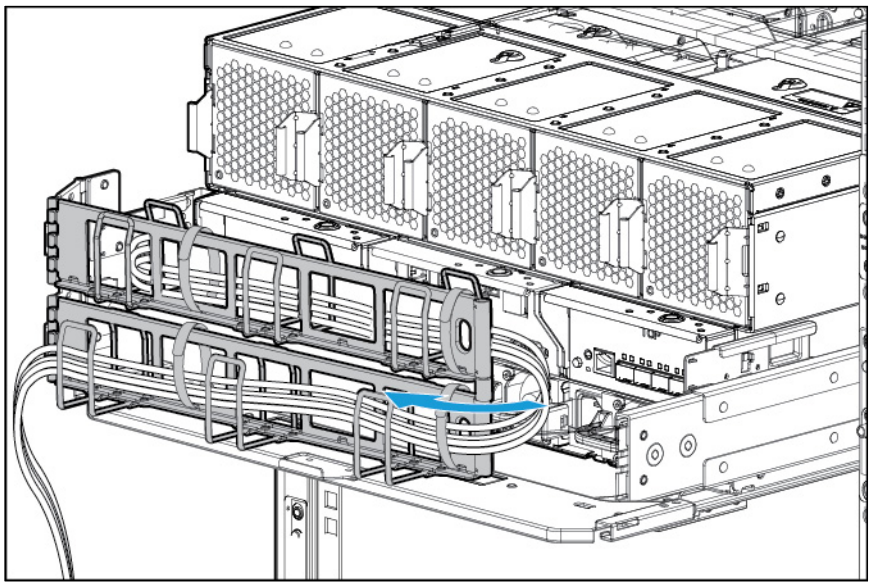
3. Lift and remove the access panel.



Turn the access panel over to locate the HP Moonshot 1500 Chassis label. This label provides information on LED status indicators, component identification, and chassis and switch installation procedures.

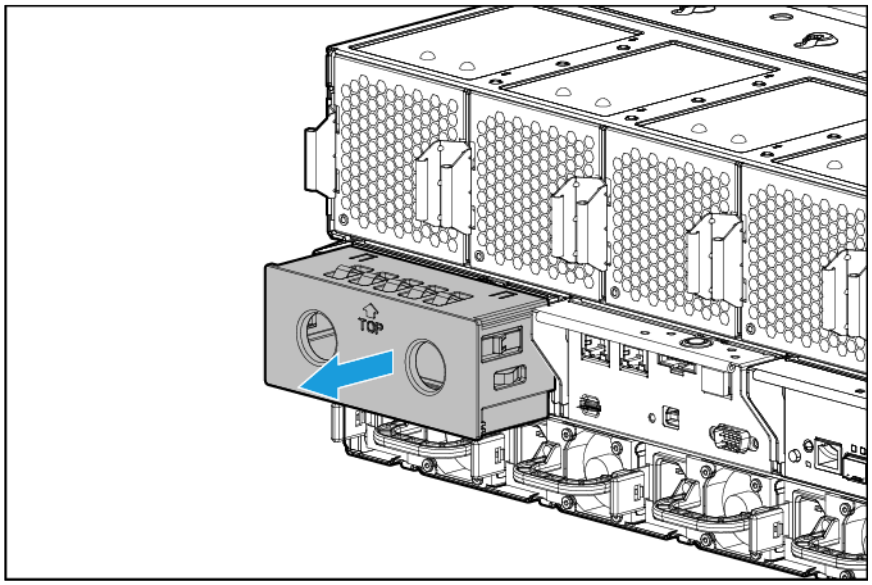
Open the cable management arm

To open the cable management arm, lift it up as you swing it open.



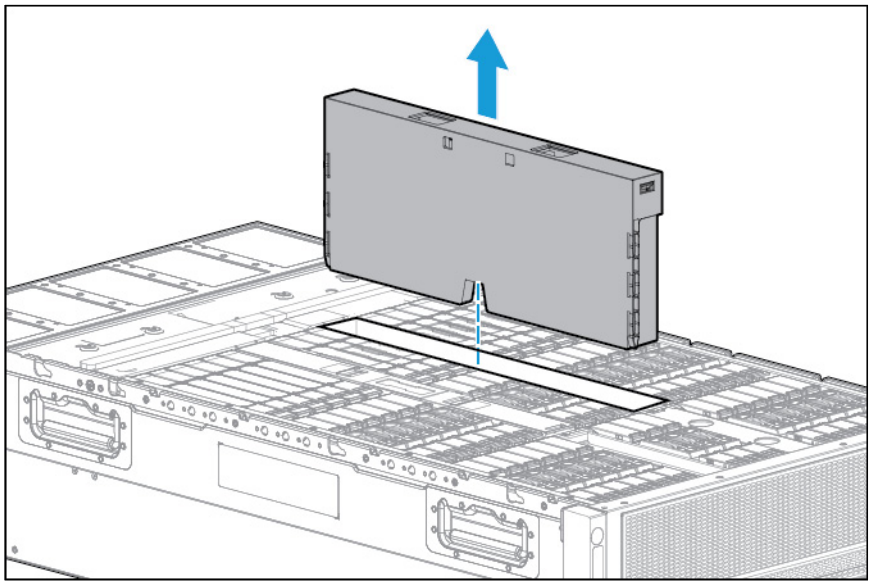
Remove the uplink module blank

Remove the component as indicated.



Remove the switch module blank

Remove the component as indicated.

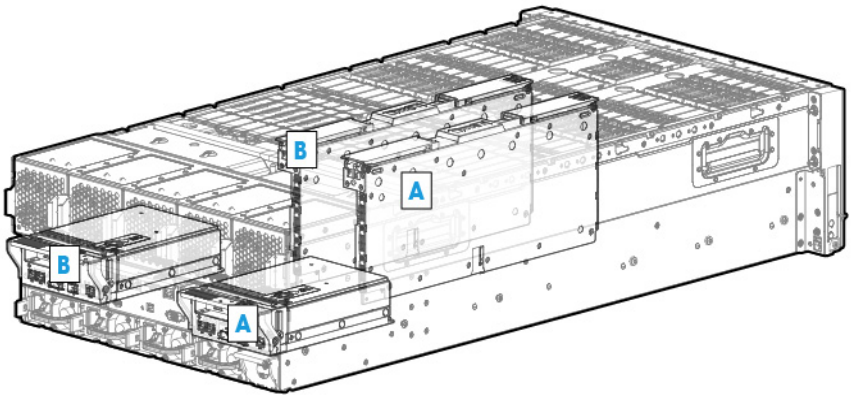


Setup

Installation information and guidelines

Before installing the module, review the following:

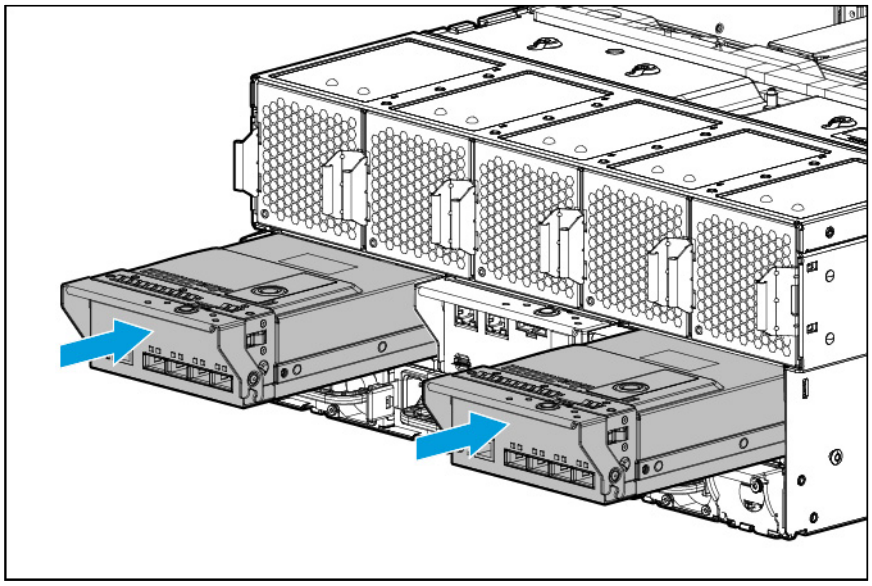
- Always install the switch module and the uplink module in corresponding bays. Both components must be installed for normal operation.



- The switch module and the uplink module can be installed in any order.
- The switch module and the uplink module power down when either module is removed from the chassis.
- The switch module and the uplink module power up after both modules are installed in the chassis.
- Removing any component from bay A or bay B does not disrupt traffic for the other switch.
- Always use the recommended firmware version. For current information on recommended firmware versions, see the HP website (http://www.hp.com/go/moonshot/download).
- For the most current product information, see the HP Moonshot Information Library (http://www.hp.com/go/moonshot/docs).

Uplink module bays

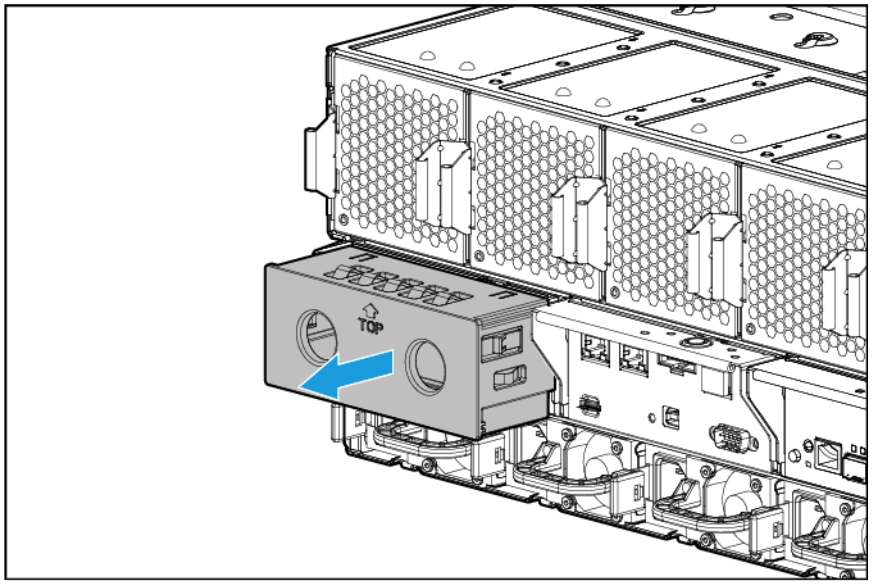
The uplink module can be installed in the uplink module bays located in the rear of the chassis.



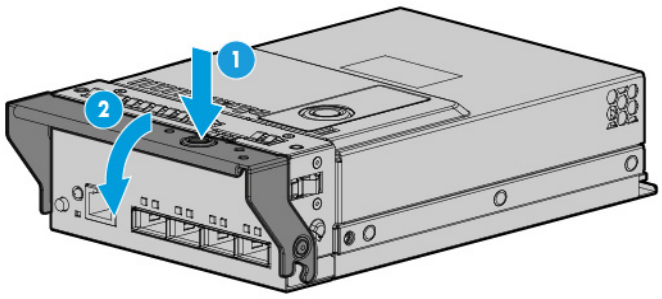
Installing the uplink module

IMPORTANT: To avoid connectivity loss, do not remove any network cables or uplink modules already in operation.

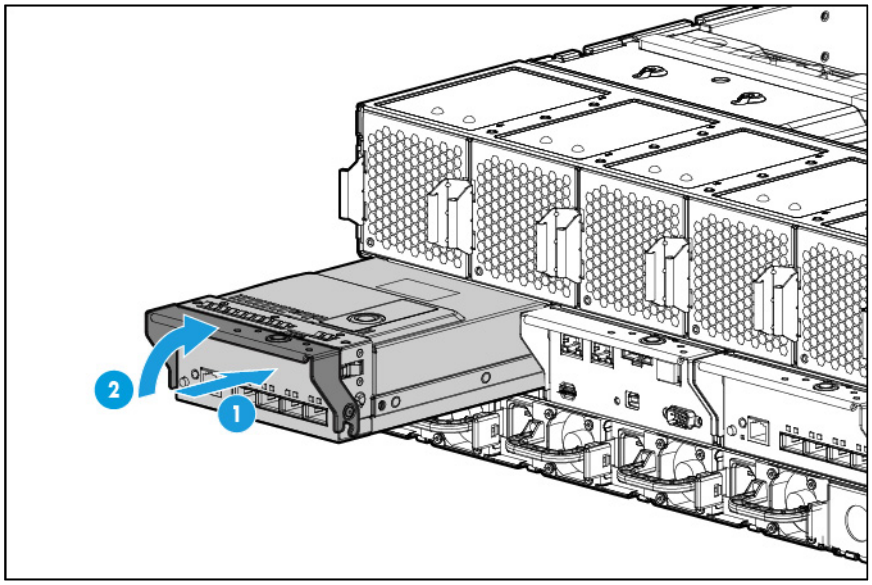
1. Remove the uplink module bay blank.



2. Prepare the uplink module for installation.



3. Install the uplink module.



4. Do one of the following:
   - If the switch module is already installed, verify the uplink module powers on and the health LED is green.
   - If the switch module is not installed, install the switch module before verifying LEDs.

   For more information, see the "Installation information and guidelines (on page 13)."
5. After both components have been installed, verify the switch firmware is at the recommended firmware version. For more information, see the HP website (http://www.hp.com/go/moonshot/download).

The installation is complete.

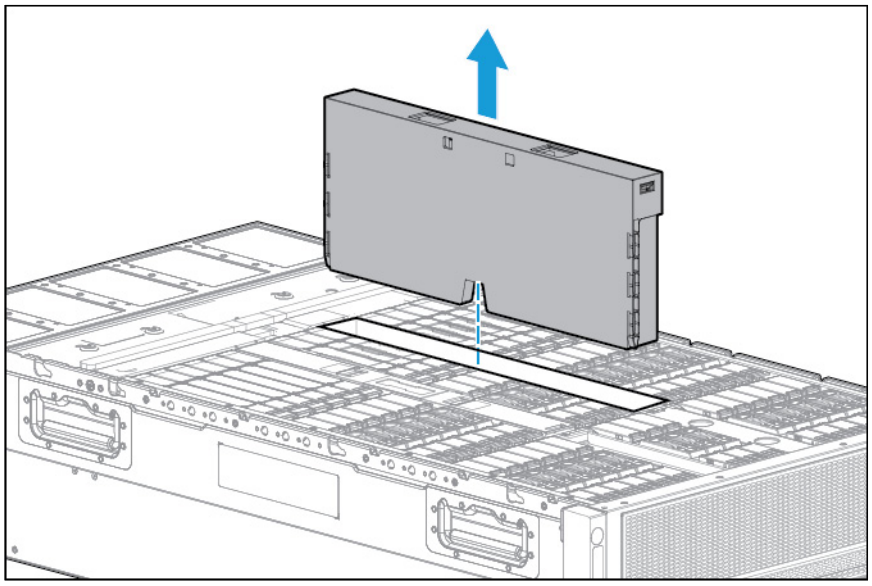
Installing the switch module

CAUTION: To avoid connectivity loss, do not remove switches already in operation.

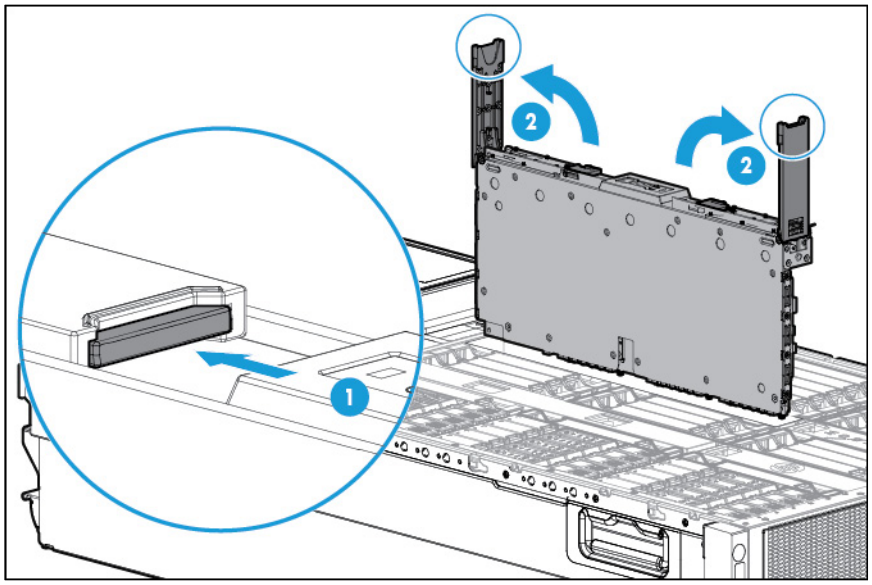
To install the switch module:

1. Extend the chassis from the rack (on page 9).
2. Remove the access panel (on page 10).

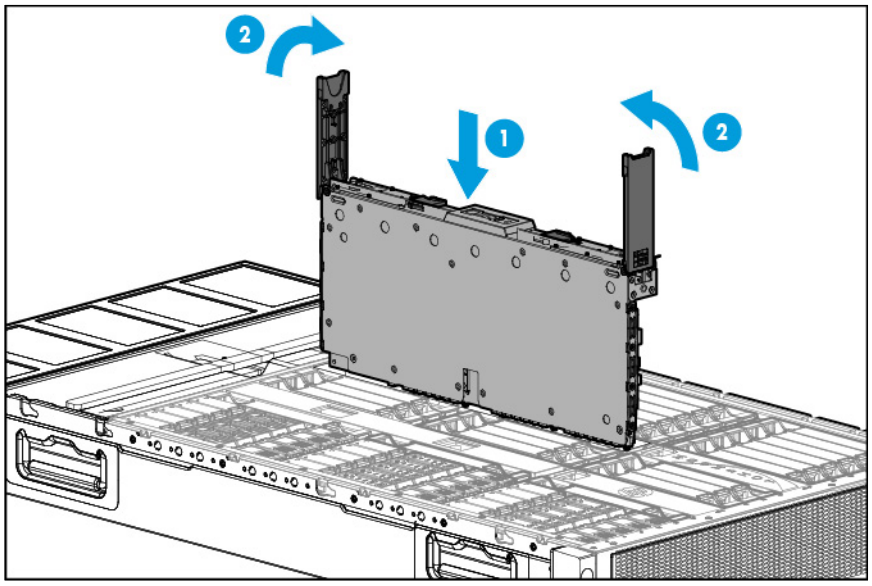
3. Locate the switch module slot and remove the blank.



4. Prepare the switch module for installation.



5. Align and install the switch module into the chassis.



6. Do one of the following:
   - If the uplink module is already installed, verify the switch module powers on and the health LED is green.
   - If the uplink module is not installed, install the uplink module before verifying LEDs.

   For more information, see "Installation information and guidelines (on page 13)."
7. Install the access panel.
8. Install the chassis in the rack.
9. After both components have been installed, verify the switch firmware is at the recommended firmware version (http://www.hp.com/go/moonshot/download).

The installation is complete.

Cabling

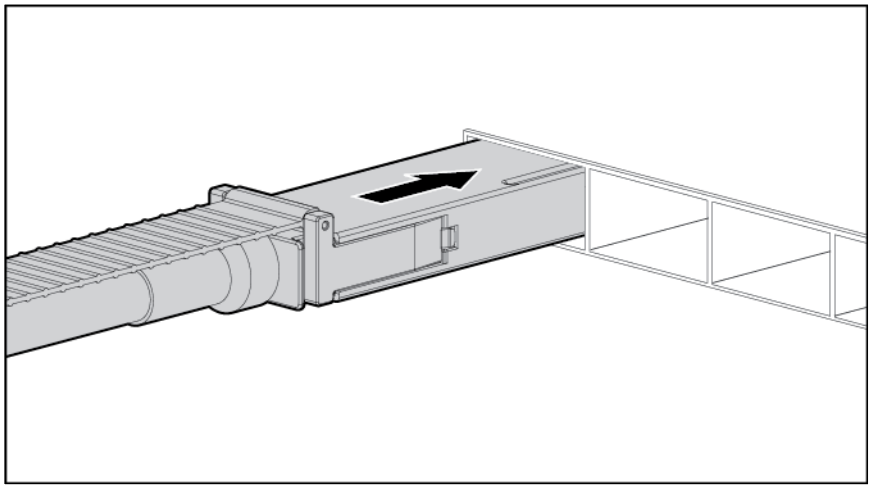
Supported cables and transceivers

The following cables and transceiver modules are supported for the HP Moonshot-4QSFP+ Uplink Module:

- HP 40GBASE QSFP+ DAC
- HP 40GBASE QSFP+ to 4x10G SFP+
- HP 40GBASE QSFP+ SR4
- HP 40GBASE QSFP+
- HP QSFP+ to SFP+ Adapter

Installing a DAC cable

1. If needed, remove the packaging and protective caps.
2. Verify the cable is the correct type by checking the label on the transceiver.
3. Remove the dust plug from the correct port.
4. Align the transceiver in front of the port with the label facing up.
5. Install the cable. (A QSFP+ DAC cable shown.)



Installing a transceiver

WARNING: To avoid serious injury, never look directly into an open transceiver port.

CAUTION: Disconnect all cables before removing or installing any transceivers or transceiver adapters. Leaving the cable connected while handling the transceiver may damage the cable, the cable connector, or the optical interfaces in the transceiver.
Do not remove and install transceivers more often than is necessary. Doing so can shorten the useful life of the transceiver.

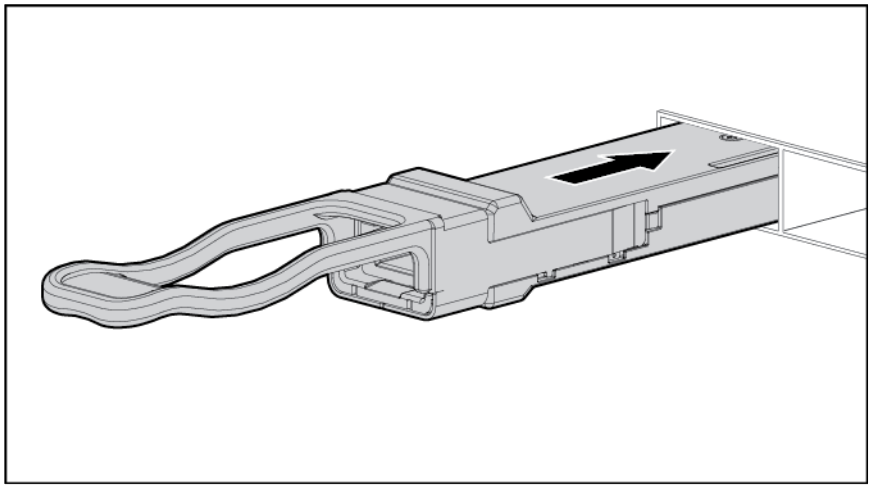
CAUTION: Do not remove the dust plugs from the transceiver or the connector until you are ready to connect the cable. The plugs protect the ports and connectors from contamination and ambient light.

NOTE: Transceivers may have a bail clasp latch or a pull tab latch. If installing a transceiver with a bail clasp latch, be sure the latch is closed before connecting the cable.

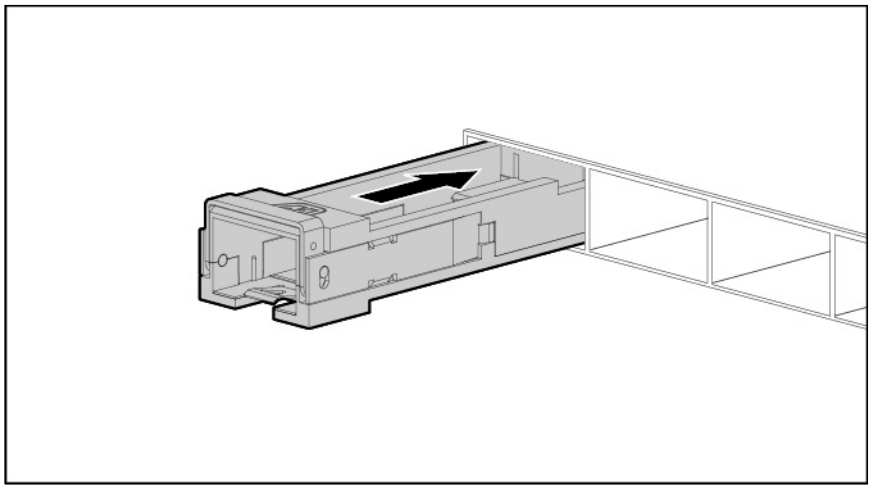
To install a transceiver or transceiver adapter:

IMPORTANT: Use only HP approved transceivers.

1. Verify the transceiver type by checking the label.
2. Remove the dust plug from the correct port.
3. Align the transceiver in front of the port with the label facing up.
4. Install the transceiver:
   - QSFP+



- Transceiver adapter



If a cable needs to be connected, remove any dust plugs or covers, and then connect the cable.

Command Line Interface

Connecting to the switch console

To connect to the switch console, use one of the following methods:

- To connect locally, use the serial console port ("Accessing the CLI locally" on page 21).
- To connect remotely, be sure the management network is connected to the iLO CM management port ("Accessing the CLI remotely" on page 22).
- To connect using iLO, use the virtual serial port from the iLO CLI ("Accessing the CLI using iLO" on page 22).

Default user name and password

No user name or password is required to login to the switch by default.

Terminal settings

Use the following terminal settings when connecting to the serial console port ("Moonshot-4QSFP uplink module components" on page 6):

- 115200 baud rate
- 8 data bits
- No parity
- 1 stop bit
- No flow control

Accessing the CLI locally

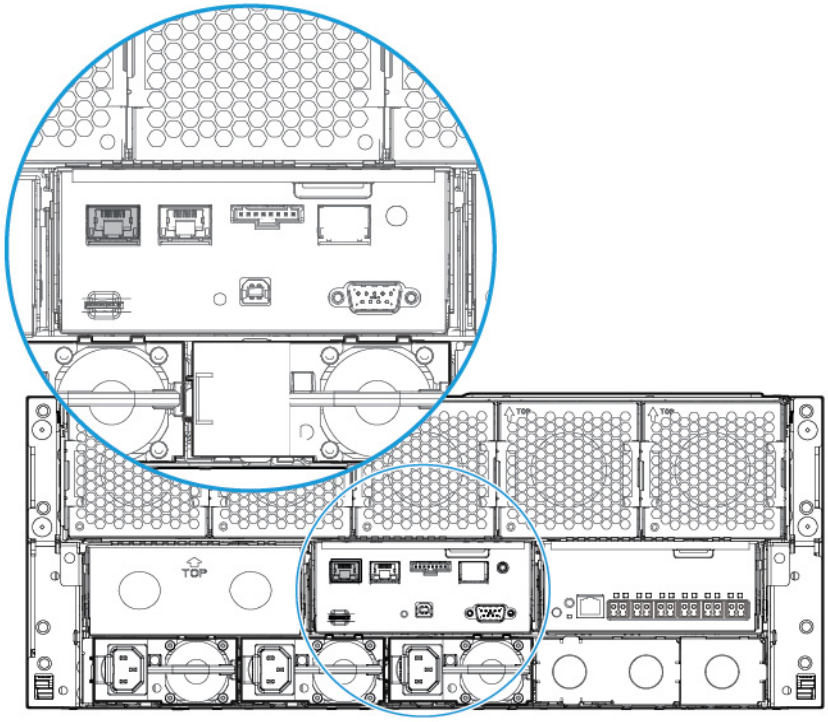
If using a PC with a terminal emulator, be sure a terminal emulator is installed before communicating with the switch.

1. Use a console cable to connect a PC or terminal to the serial console port on the uplink module. ("Moonshot-4QSFP uplink module components" on page 6)
2. Configure the terminal settings (on page 21).
3. Start the terminal.

   The switch prompt appears.

Accessing the CLI remotely

Remote administration of the switch occurs through the iLO/MGMT port, located on the iLO CM module. To communicate with the switch remotely, connect the iLO CM management port to the management network.



After connecting the iLO/MGMT port to the management network, perform the following:

- Configure a static management IP address or use DHCP services to assign a management IP address.
- Configure access authentication methods.

To see configuration procedures, see the *HP Moonshot-45XGc Switch Fundamentals Configuration Guide* in the HP Moonshot Switch Library (http://www.hp.com/go/moonshot/XGcSwitch).

Accessing the CLI using iLO

To connect to the switch VSP from the iLO CLI, enter:

```
connect switch vsp {sa|sb}
```

The switch console is displayed.

Interacting with the switch from the iLO CM firmware

Interact with the switch using the following iLO CM firmware commands.

To show switch information:

- `show switch info`
- `show switch list`
- `show switch sn {sa|sb|sa-b}`
- `show switch pid {sa|sb|sa-b}`
- `show firmware revisions`

- `show switch power`
- `show switch temperature`

To set switch power or switch UID LED:

- `set switch power {off|on} {sa|sb|sa-b}`
- `set switch uid {off|on} {sa|sb|sa-b}`

For more information on the iLO CM firmware, see the latest *HP Moonshot iLO Chassis Management CLI User Guide* in the HP Moonshot Information Library (http://www.hp.com/go/moonshot/docs).

Configuration

Switch documentation

To configure the switch, see the switch configuration guides in the HP Moonshot Switch Information Library (http://www.hp.com/go/moonshot/XGcSwitch).

Firmware

Update the switch firmware

Before updating switch firmware, see the "Upgrading software" section of the *HP Moonshot-45XGc Fundamentals Configuration Guide* in the HP Moonshot Switch Information Library (http://www.hp.com/go/moonshot/XGcSwitch).

You can download firmware updates from the HP Moonshot Component Pack download site (http://www.hp.com/go/moonshot/download).

IMPORTANT: Use the switch console to update firmware. The switch firmware cannot be updated through the iLO CLI.

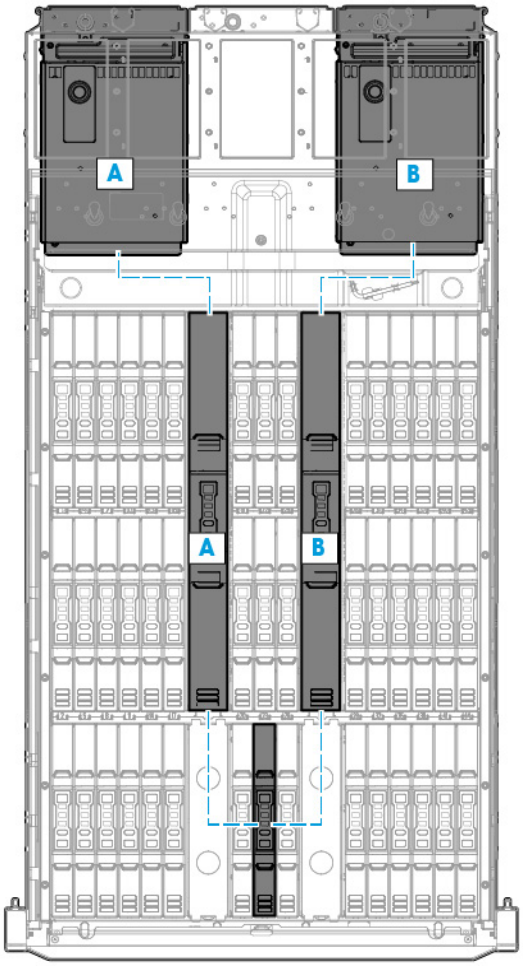
Updating switch firmware with a reboot

The following example upgrades a software image for an IRF fabric using the filename *startup-a2105.ipe*.

```
# Configure IP addresses and routes so the device and the TFTP server can
reach each other.
(Details not shown.)
# Configure TFTP settings on both the device and the TFTP server.
(Details not shown.)
# Display information about the current software images.
<Sysname> display version
# Use TFTP to download the image file startup-a2105.ipe from the TFTP server
to the root directory of the
flash on the master device.
<Sysname> tftp 2.2.2.2 get startup-a2105.ipe
# Specify startup-a2105.ipe as the main startup image file for all IRF member
devices.
<Sysname> boot-loader file flash:/startup-a2105.ipe slot 1 main
# Verify the startup image settings.
<Sysname> display boot-loader
# Reboot the device to complete the upgrade.
<Sysname> reboot
# Verify that the device is running the correct software.
<Sysname> display version
```

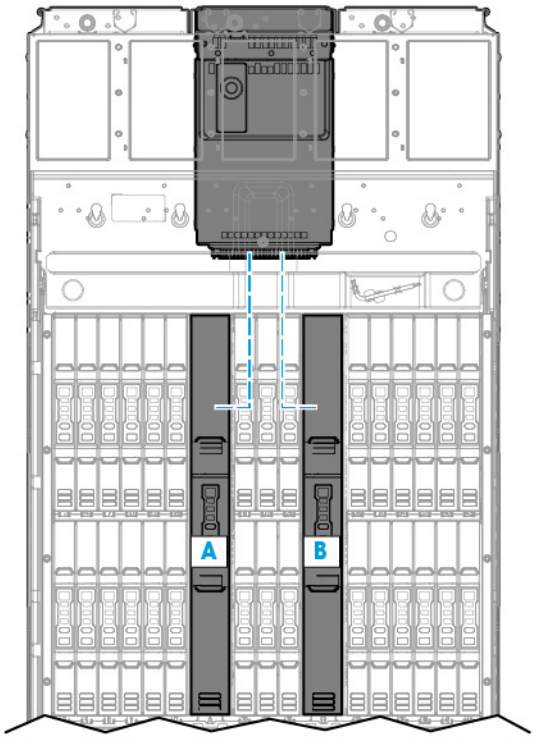
Network mapping

Production network mapping



The first network interface discovered by the operating system routes traffic through switch A. The second network interface discovered by the operating system routes traffic through switch B.

Management network mapping



All traffic from the service port management interface is routed through the iLO CM management port.

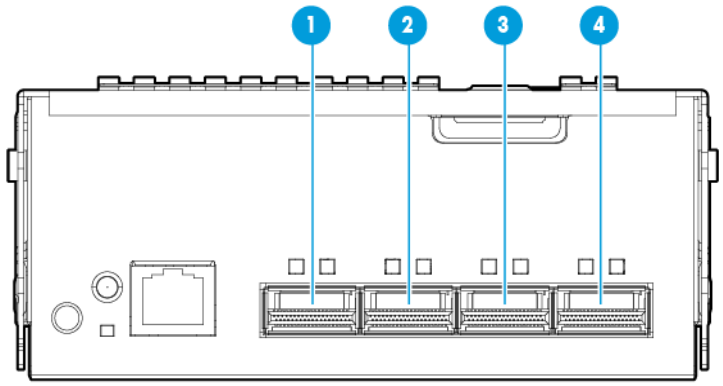
Interfaces

Interfaces are identified by the switch CLI using a unit/slot/port naming convention:

- The unit number identifies the stack member within a stack of switches.
- The slot number identifies one of the following:
  - Internal ports are located on slot 0.
  - External ports are located on slot 1.
- The port identifies the specific physical port or logical interface being managed on a given slot.

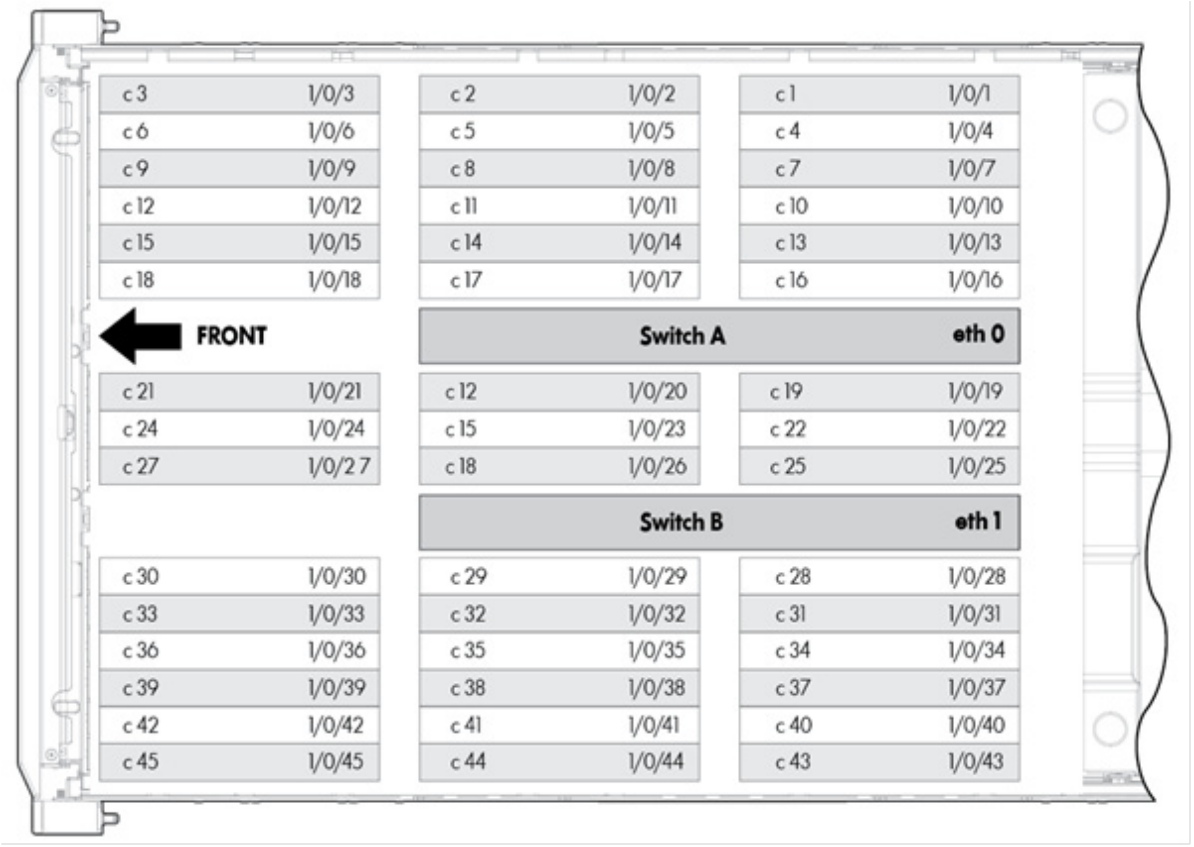
To learn more, see switch documentation in the HP Moonshot Networking Library (http://www.hp.com/go/moonshot/networking).

Moonshot-4QSFP+ uplink interfaces



Item	Port	Port speed	Interface
1	Q1	40Gb 10Gb	fortygige1/1/1 ten-gigabitethernet1/1/1:1–4
2	Q2	40Gb 10Gb	fortygige1/1/2 ten-gigabitethernet1/1/2:1–4
3	Q3	40Gb 10Gb	fortygige1/1/3 ten-gigabitethernet1/1/3:1–4
4	Q4	40Gb 10Gb	fortygige1/1/4 ten-gigabitethernet1/1/4:1–4

Moonshot-45XGc downlink interfaces



Interfaces 1/0/1–1/0/45 are the downlinks to the cartridge nodes.

Each SoC is identified as a cartridge node. The iLO CM firmware identifies each node as `cxny`, where `c` is the cartridge and `n` is the node.

Switch interfaces correspond to cartridge nodes, respectively. For example, `c28n1` corresponds to cartridge 28, node 1, and interface 1/0/28.

Troubleshooting

Troubleshooting resources

The *HP Moonshot System Troubleshooting Guide* provides procedures for resolving common problems and comprehensive courses of action for fault isolation and identification, issue resolution, and software maintenance on the HP Moonshot System. The document is available in the HP Moonshot Information Library (http://www.hp.com/go/moonshot/docs).

Illustrated parts catalog

Customer self repair

HP products are designed with many Customer Self Repair (CSR) parts to minimize repair time and allow for greater flexibility in performing defective parts replacement. If during the diagnosis period HP (or HP service providers or service partners) identifies that the repair can be accomplished by the use of a CSR part, HP will ship that part directly to you for replacement. There are two categories of CSR parts:

- **Mandatory**—Parts for which customer self repair is mandatory. If you request HP to replace these parts, you will be charged for the travel and labor costs of this service.
- **Optional**—Parts for which customer self repair is optional. These parts are also designed for customer self repair. If, however, you require that HP replace them for you, there may or may not be additional charges, depending on the type of warranty service designated for your product.

NOTE: Some HP parts are not designed for customer self repair. In order to satisfy the customer warranty, HP requires that an authorized service provider replace the part. These parts are identified as "No" in the Illustrated Parts Catalog.

Based on availability and where geography permits, CSR parts will be shipped for next business day delivery. Same day or four-hour delivery may be offered at an additional charge where geography permits. If assistance is required, you can call the HP Technical Support Center and a technician will help you over the telephone. HP specifies in the materials shipped with a replacement CSR part whether a defective part must be returned to HP. In cases where it is required to return the defective part to HP, you must ship the defective part back to HP within a defined period of time, normally five (5) business days. The defective part must be returned with the associated documentation in the provided shipping material. Failure to return the defective part may result in HP billing you for the replacement. With a customer self repair, HP will pay all shipping and part return costs and determine the courier/carrier to be used.

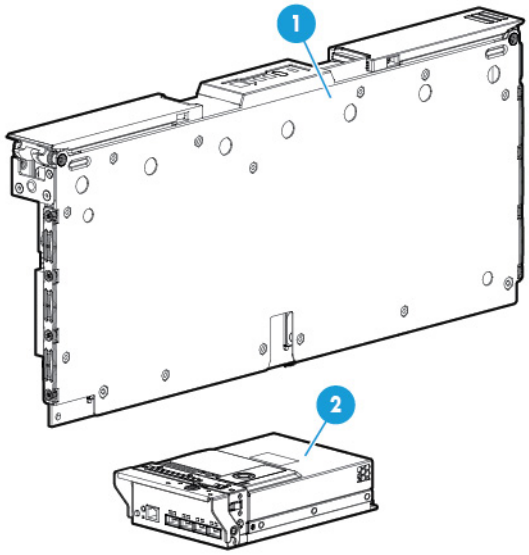
For more information about HP's Customer Self Repair program, contact your local service provider. For the North American program, refer to the HP website (http://www.hp.com/go/selfrepair).

Parts only warranty service

Your HP Limited Warranty may include a parts only warranty service. Under the terms of parts only warranty service, HP will provide replacement parts free of charge.

For parts only warranty service, CSR part replacement is mandatory. If you request HP to replace these parts, you will be charged for the travel and labor costs of this service.

Switch customer self repair components



Item	Description	Spare part number	Customer self repair (on page 31)
1	HP Moonshot-45XGc Switch Module	712695-001	Mandatory[1]
2	HP Moonshot-4QSFP+ Uplink Module	712694-001	Mandatory[1]
3	Switch module bay blank*	726173-001	Mandatory[1]
4	Uplink module bay blank*	745288-001	Mandatory[1]

* Not shown

[1]Mandatory—Parts for which customer self repair is mandatory. If you request HP to replace these parts, you will be charged for the travel and labor costs of this service.

[2]Optional—Parts for which customer self repair is optional. These parts are also designed for customer self repair. If, however, you require that HP replace them for you, there may or may not be additional charges, depending on the type of warranty service designated for your product.

[3]No—Some HP parts are not designed for customer self repair. In order to satisfy the customer warranty, HP requires that an authorized service provider replace the part. These parts are identified as "No" in the Illustrated Parts Catalog.

Removal and replacement procedures

Removing the switch module

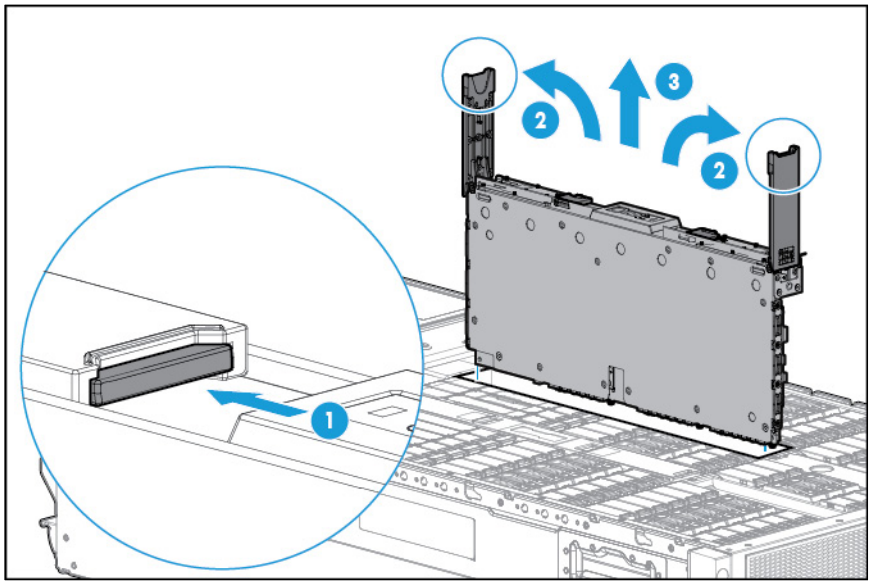
CAUTION: Be sure to save the running-configuration of the switch before removing any switch components.

CAUTION: To avoid connectivity loss, do not remove switches already in operation.

CAUTION: For proper cooling, be sure every switch module bay and uplink module bay has either a blank or a module installed.

To remove the switch module:

1. Extend the chassis from the rack (on page 9).
2. Remove the access panel (on page 10).
3. Locate and remove the switch module.



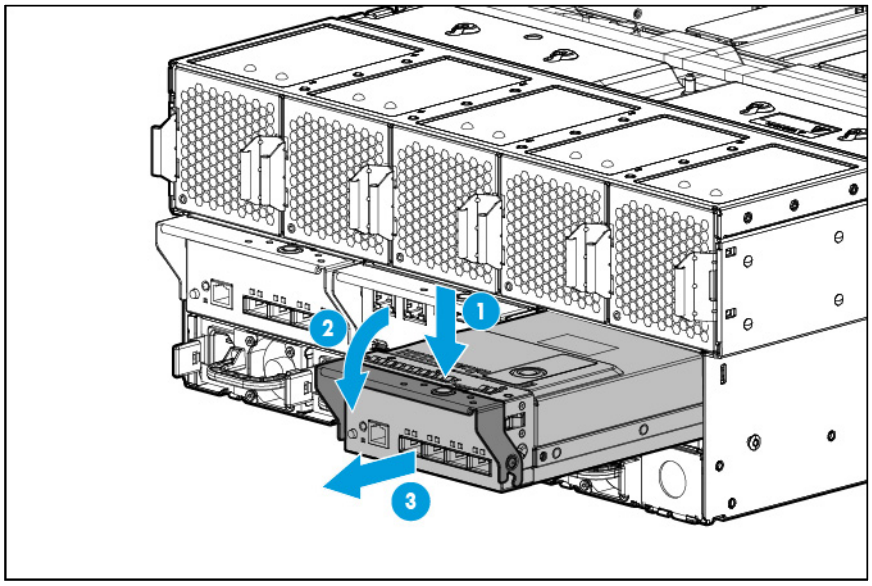
Removing the uplink module

CAUTION: Be sure to save the running-configuration of the switch before removing any switch components.

CAUTION: To avoid connectivity loss, do not remove switches already in operation.

CAUTION: For proper cooling, be sure every switch module bay and uplink module bay has either a blank or a module installed.

1. Open the cable management arm (on page 11).
2. Remove the component as indicated.



Regulatory information

Safety and regulatory compliance

For safety, environmental, and regulatory information, see *Safety and Compliance Information for Server, Storage, Power, Networking, and Rack Products*, available at the HP website (http://www.hp.com/support/Safety-Compliance-EnterpriseProducts).

Turkey RoHS material content declaration

Türkiye Cumhuriyeti: EEE Yönetmeliğine Uygundur

Ukraine RoHS material content declaration

Обладнання відповідає вимогам Технічного регламенту щодо обмеження використання деяких небезпечних речовин в електричному та електронному обладнанні, затвердженого постановою Кабінету Міністрів України від 3 грудня 2008 № 1057

Warranty information

HP ProLiant and X86 Servers and Options (http://www.hp.com/support/ProLiantServers-Warranties)

HP Enterprise Servers (http://www.hp.com/support/EnterpriseServers-Warranties)

HP Storage Products (http://www.hp.com/support/Storage-Warranties)

HP Networking Products (http://www.hp.com/support/Networking-Warranties)

Electrostatic discharge

Preventing electrostatic discharge

To prevent damaging the system, be aware of the precautions you need to follow when setting up the system or handling parts. A discharge of static electricity from a finger or other conductor may damage system boards or other static-sensitive devices. This type of damage may reduce the life expectancy of the device.

To prevent electrostatic damage:

- Avoid hand contact by transporting and storing products in static-safe containers.
- Keep electrostatic-sensitive parts in their containers until they arrive at static-free workstations.
- Place parts on a grounded surface before removing them from their containers.
- Avoid touching pins, leads, or circuitry.
- Always be properly grounded when touching a static-sensitive component or assembly.

Grounding methods to prevent electrostatic discharge

Several methods are used for grounding. Use one or more of the following methods when handling or installing electrostatic-sensitive parts:

- Use a wrist strap connected by a ground cord to a grounded workstation or computer chassis. Wrist straps are flexible straps with a minimum of 1 megohm ±10 percent resistance in the ground cords. To provide proper ground, wear the strap snug against the skin.
- Use heel straps, toe straps, or boot straps at standing workstations. Wear the straps on both feet when standing on conductive floors or dissipating floor mats.
- Use conductive field service tools.
- Use a portable field service kit with a folding static-dissipating work mat.

If you do not have any of the suggested equipment for proper grounding, have an authorized reseller install the part.

For more information on static electricity or assistance with product installation, contact an authorized reseller.

Specifications

Chassis environmental specifications

Specification	Value
Temperature range*	—
Operating	10°C to 35°C (50°F to 95°F)
Non-operating	-30°C to 60°C (-22°F to 140°F)
Maximum Wet bulb temperature	—
Operating	28°C (82.4°F)
Non-operating	38.7°C (101.7°F)
Relative humidity (non-condensing)**	—
Operating	10% to 90%
Non-operating	5% to 95%

* All temperature ratings shown are for sea level. An altitude derating of 1°C per 304.8 m (1.8°F per 1000 ft) to 3048 m (10,000 ft) is applicable. No direct sunlight allowed. Upper operating limit is 3,048 m (10,000 ft) or 70 kPa/10.1 psia. Upper non-operating limit is 9,144 m (30,000 ft).
** Storage maximum humidity of 95% is based on a maximum temperature of 45°C (113°F). Altitude maximum for storage corresponds to a pressure minimum of 70 kPa (10.1 psia).

Chassis specifications

Specification	Value
Height	18.96 cm (7.46 in)
Depth	84.91 cm (33.43 in)
Width	44.33 cm (17.45 in)
Weight, fully loaded	81.65 kg (180.00 lb)
Weight, empty	43.09 kg (95.00 lb)

Support and other resources

Before you contact HP

Be sure to have the following information available before you call HP:

- Technical support registration number (if applicable)
- Product name
- Chassis serial number
- Product identification number
- Applicable error messages
- Operating system type and revision level

To obtain product information, log in to iLO CM firmware and use the `Show Chassis Info` command. For more information, see the *HP Moonshot iLO Chassis Management CLI User Guide* in the HP Moonshot Information Library (http://www.hp.com/go/moonshot/docs).

HP contact information

For United States and worldwide contact information, see the Contact HP website (http://www.hp.com/go/assistance).

In the United States:

- To contact HP by phone, call 1-800-334-5144. For continuous quality improvement, calls may be recorded or monitored.
- If you have purchased a Care Pack (service upgrade), see the Support & Drivers website (http://www8.hp.com/us/en/support-drivers.html). If the problem cannot be resolved at the website, call 1-800-633-3600. For more information about Care Packs, see the HP website (http://pro-aq-sama.houston.hp.com/services/cache/10950-0-0-225-121.html).

Acronyms and abbreviations

CM

chassis management

CMU

HP Insight Cluster Management Utility

CSR

Customer Self Repair

DAC

direct attach cable

DHCP

Dynamic Host Configuration Protocol

ESD

electrostatic discharge

ID

identification

MAC

Media Access Control

QSFP

quad small form-factor pluggable

QSFP+

enhanced quad small form-factor pluggable

SCP

Secure Copy Protocol

SFP+

enhanced small form-factor pluggable

SFTP

Secure File Transfer Protocol

SoC

system on chip

SR

short range

SSH

Secure Shell

TFTP

Trivial File Transfer Protocol

UID

unit identification

VSP

virtual serial port

Documentation feedback

HP is committed to providing documentation that meets your needs. To help us improve the documentation, send any errors, suggestions, or comments to Documentation Feedback (mailto:docsfeedback@hp.com). Include the document title and part number, version number, or the URL when submitting your feedback.

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